

USAF Lead-Free Electronics Concerns

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Overview

- Background
- Current USAF Involvement
 - Joint Services Key Concerns
 - Joint Services Path Forward
 - USAF AA
- Impacts to Programs

Background

European Parliament Directives

1 July 2006

STATUTORY INSTRUMENTS

DIRECTIVE 2002/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 27 January 2003

on the restriction of the use of certain hazardous substances in electrical and electronic equipment

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,
Having regard to the Treaty establishing the European Community, and in particular Article 95 thereof,
Having regard to the proposal from the Commission (1),
Having regard to the opinion of the Economic and Social Committee (2),
Having regard to the opinion of the Committee of Regions (3),
Acting in accordance with the procedure laid down in Article 251 of the Treaty in the light of the joint text approved by the Conciliation Committee on 8 November 2002 (4),

to be protected and an overall strategy that in particular restricts the use of cadmium and stimulates research into substitutes should therefore be implemented. The Resolution stresses that the use of cadmium should be limited to cases where suitable and safer alternatives do not exist.
(5) The available evidence indicates that measures on the collection, treatment, recycling and disposal of waste electrical and electronic equipment (WEEE) as set out in Directive 2002/96/EC of 27 January 2003 of the European Parliament and of the Council on waste electrical and electronic equipment (6) are necessary to

Restriction **o**f the use of certain **H**azardous
Substances in Electrical and Electronic Equipment
(RoHS)

Waste Electrical and **E**lectronic **E**quipment
(WEEE)

Government Response “We’re Exempt”

1st – Ignore Problem (didn’t work)

2nd – Ban use of Lead-Free solder (didn’t work)

3rd – Deal with the problem-Ind/Govt
AIA/GEIA/AMC LEAP WG documents:

Performance Standard

Mitigating Effects of Tin Standard

PM/SE Guidelines Handbook

Tech Guidelines Handbook

Repair & Rework Handbook

Reliability/Safety Impact Handbook

Reliability Testing Standard

- JCAA/JG-PP Reliability Tests

- XRF “Shootout”

Market Changed! -- Aerospace – 1%
Just one part of a larger picture...

Current USAF Involvement

- **GEIA LEAP WG**
 - DoD/Industry Consortia creating Handbooks and Standards
 - “Actionable Deliverables”
- **ELF IPT**
 - DoD/Industry Team addressing DoD Specific Issues (Policy, etc...)
- **NASA/DoD Test Project**
 - Follow-On to JG-PP Project; testing mixed solders
- **USAF Lead Free Electronics Team (LFET)**
 - USAF AA
- **Joint Services Team**
 - Air Force, Army, Navy, DLA, MDA, and NASA
 - Common Solutions to Common Problems

Joint Services Key Concerns

- Lack of Awareness at all levels within DoD support and program management functions.
- No Policy or tools available to assist with determining to what level of control the various managers should strive to implement.
 - Acquisition
 - Sustainment
- Apparent Disconnect between system/program “managers” and repair lines.
 - Lack of unified/common training requirements.
- Unknown Status of Parts in supply system.
- Gaps in Knowledge in key technical areas.
 - Reliability of emerging solder technologies.

Joint Services Path Forward

- NSWCC Crane has been designated as the Lead Standardization Activity (LSA) for Soldering Technologies.
 - LSAs are under the auspices of the Defense Standardization Program (DSP) and the Defense Standardization Program Office (DSPO).
 - A LSA is a management activity assigned a DoD-wide responsibility for ensuring the optimal degree of standardization in a standardization area (soldering).
- **“Houston, we have a sponsor!”**

Goals and Objectives

- Establish a working group to support this effort.
 - **Status:** Completed--DoD Soldering Technologies Working Group, Mr. Tim Kalt USAF chairman, based on the the Joint Services Working Group. Next meeting 9-11 SEP at Hill AFB. (Does include NASA, FAA, USCG, etc.)
- Develop Technical Guidance for Pb-free in DoD.
 - **Status:** Draft completed, ready to vet through working group. (based on USAF Airworthiness Advisory).
- Develop a DoD LFCP.
 - **Status:** Draft completed, ready to vet through working group. (based on other DoD LFCPs).
- Develop DoD LFCP templates for activities and commands.
 - **Status:** Drafts in-process. (based on other DoD LFCPs).

USAF Airworthiness Advisory

Background

- **Previous AA (May 2005) AA-05-01**
 - Provided background and risks.
 - Put Contractors on notice that USAF saw Pb-Free Electronics as an issue.
 - Cautioned USAF PMs to not allow Pb-Free into their systems.
- **Current AA (Apr 2008) AA-08-02**
 - Pb-free events & activities created need for “updated” AA
 - Pb-free piece parts in the inventory today

USAF Airworthiness Advisory

Content

- **Pb-Free Concerns Identified**
 - **Reliability, Configuration Control, Risk Management, Effects of Sn in the System, & Rework/Repair.**
- **Guidance for**
 - **Acquisition Folks**
 - **GEIA Documents recommended (for reading & application)**
 - **Procurement Folks**
 - **Inventory Control**
 - **Logistics Folks**
 - **Depot Surveys, Technical Orders and Training**

USAF Airworthiness Advisory *Content*

- **Coordinated with other Services**
 - Easily used by other DoD organizations or to provide leverage to generate their own policy/guideline/advisory
 - Consistent message is intentional
- **Shows USAF concern for the issue and the need for DoD Policy**
- **Gives concerned Systems Engineer a proactive voice**
- **Allows Industry to prepare in advance for PM's requests for information**

Possible Impacts to Programs

- **New Contracts vs. Existing Contracts**
 - New Contracts addressed by new requirements
 - Existing Contracts require changes (+\$\$\$)
- **Program Manager requests**
 - Reliability
 - How do you demonstrate/assure reliability?
 - Lead Free Control Plan
 - How is your Supply Chain addressing Pb-free?
 - GEIA Documents
 - Added to contractual requirements
 - Sustainment Issues
 - Rework/Repair Procedures

QUESTIONS?

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